Figure S1: Mean wind direction for each $^{14}$CO$_2$ sample used in this analysis. Calculated as the mean across the 30 minutes prior to sampling.

Figure S2. Mean wind speed for each $^{14}$CO$_2$ sample used in this analysis. Calculated as the mean across the 30 minutes prior to sampling.

Figures S3-S10: Shows data used to estimate median tracer/CO$_2$ff ratios with and without low CO$_2$ff cutoff (see Sec 2.6 for description) and wind speed (see Sec. 2.1 for description) filters. In all figures, blue data corresponds to S wind sector and red data corresponds to N/E wind sector. See Sec. 2.1 for wind sector definitions. Row 1 (a, d, g, j): wind speed and low CO$_2$ff cutoff filter; row 2 (b, e, h, k): low CO$_2$ff cutoff filter only; row 3 (c, f, i, l): wind speed filter only. Column 1 (a-c): time series of individual data points; columns 2 and 3 (d-i): histograms of data in column 1 for N/E (red, d-f) and S (blue, g-i) wind sectors; column 4 (j-l): median tracer/CO2ff ratios for N/E (red) and S (blue) wind sectors. The data shown in row 1 corresponds to the data used to derive emission ratios and absolute emissions estimates in the manuscript.
Figure S2
Figure S3 CO/CO$_2$ff ratios
Figure S4 CH_{4}/CO_{2}ff ratio
Figure S5 C2H2/CO2ff ratio
Figure S6 C6H6/CO2ff ratio
Figure S7 iC5H12/CO2ff ratio
Figure S8 n-C5H12/CO2ff ratio
Figure S9 n-C4H10/CO2ff ratio
Figure S10 C3H8/CO2ff ratio